UNITED STATES PATENT APPLICATION FOR

METHOD AND APPARATUS FOR

SELECTIVE AND AUTOMATIC TWO-WAY BEAMING

OF RELATED INFORMATION

TO AND FROM

PERSONAL INFORMATION MANAGEMENT SYSTEMS

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5   PERSONAL INFORMATION MANAGEMENT SYSTEMS

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates to the field of computer

10   systems and database technology. More specifically embodiments

of the present invention relate to the field of portable

electronic devices, such as personal digital assistants (PDAs),

cell phones, pagers, etc.

RELATED ART

15   Recent miniaturization of electronic components has

led the way to the reduction in size of almost all

electronic components. Reduction in the size of electronic

components resulted in physically smaller sized electronic

20   devices. Manufacturers of the electronic components, at

the same time, took the opportunity to add new features to

the same or even to the reduced sized electronic devices.

Electronic organizers were introduced to the market

25   more than two decades ago. These devices were commonly

used to store and maintain address books, telephone listings and daily activity schedules albeit with limited number of records due to limited storage capacity. Subsequent development of such devices introduced limited

5 capability calculating functions, weekly and monthly scheduling "to do lists" and business card files. The most noticeable developments in this family of devices, in the recent years, are increased memory size, reduced physical size, communication capabilities and increased

10 functionality.

The emergence of Personal Digital Assistant, commonly known as PDA, introduced a new type of organizers. The PDA's have capability to store telephone numbers,

15 addresses, daily appointments and software that keeps track of business or personal data such as expenses. Furthermore, the present PDA's have the capability to synchronize to a personal computer, thus enabling the two devices to exchange updated information together.

20 Additionally, the PDA can connect to a modem, enabling it to have electronic mail (e-mail) capabilities. Another recent development in PDA technology is capability to browse Web pages located on the Internet and synchronize,

e.g., HotSync, with another device or with a compatible personal computer. Moreover, an advanced PDA can have Internet capabilities to communicate over a wireless interface. (e.g. radio interface).

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A typical PDA user often uses the device during a business meeting. The user can easily access his/her customized telephone directory, schedule business activities, send and receive e-mails, and connect to the

10 Internet, etc.

More advanced PDA devices, such as hand-held computer systems, each have the capability to wirelessly exchange certain category of information such as an electronic

15 business card. For example, in a business meeting, one needs not hand over a conventional paper business card to another participant in the meeting. If both parties own handheld computers, exchange of business cards can be accomplished electronically and wirelessly. In such

20 situations, one requests a business card from another and the other party positions his/her handheld computer device facing that of the requester's and by push of a button

simply beams an electronic version of his/her business card to the requester.

Presently, the distance between the two devices limits a successful transmission of information. The distance between a transmitting device and receiving device cannot be more than a few feet or maximum of three yards. Limitation of distance for a successful exchange of electronic business cards is one shortcoming in the available devices.

Generally the exchange of electronic business card is completed once the sender of a business card beams his/her card to the other person's handheld device which is ready to receive the information. However, If the sender of the electronically beamed electronic business card desires to receive the other party's electronic business card, then the entire process must be reinitiated. Available devices require two different user initiated transmissions and therefore two different sets of user initiated transactions for a bilateral exchange of business cards. Requirement of two sets of user initiated transactions to

exchange business cards between two associates in and of itself is another shortcoming to the present systems.

User convenience is a very important factor for portable electronic devices. Typically, portable electronic devices are employed while the user is on the run, e.g., in business meetings, on business travel, personal travel, in a vehicle, on foot, etc. Because the user may be occupied or busy while using the portable electronic device, the number of user steps or user tasks required in order to access information from an electronic device (or to store information into the electronic device) is crucial for producing a commercially successful and useful product. That is, the more difficult it is to access data from an electronic device, the less likely the user will perform those tasks to obtain the information. Likewise, the easier information is to obtain, the more likely the portable electronic device will be used to obtain that information and the more likely the portable electronic device will become a part of the user's everyday activities.

Therefore, by requiring two user initiated steps to perform an electronic business card swap, it is possible that many users will not perform a full exchange because the first receiver of the business card does not wish to

5   manually go through with the trouble of initiating the last transfer of information. This may be because the first recipient is on the run, late for another meeting, or simply does not want to go through the manual processing of sending his/her business card to the first

10   sender.

SUMMARY OF THE INVENTION

The present invention enables an owner of a handheld electronic device to receive a business card from another device and send his/her electronic business card to other

5 party's device in one transaction. An embodiment of the present invention enables the users of these devices to exchange business cards automatically and with user initiation from only one party. For example, in a business meeting, an owner of one handheld device beams his/her business card to the owner of

10 another's device and the receiver device selectively and electronically responds. The receiving device receives the signal from the requester and if the receiving device is in "RECEIVE AND AUTOMATIC RESPONSE" mode, it will receive the electronic business card, file the information and

15 automatically send a responding business card to the requester who initiated the process. However, if the recipient device is set to "ACCEPT NO RESPONSE" mode, the receiving device will receive and file the business card but does not send a corresponding business card in return. Furthermore, a device

20 may be set in "REJECT" mode; in which case the receiving devices neither accepts nor transmits an electronic business cards.

The present invention discloses a method and a

25 system for selective exchange of electronic business cards, calendar information and general data structure between

handheld computer systems. Furthermore, the present invention discloses a wireless exchange of the above-mentioned information by means of infrared communication or a communication mechanism, which is substantially compatible with a Bluetooth communication protocol.

A method and system are described of automating two way transmission of information from one handheld electronic device to another handheld electronic device. Specifically, the present invention discloses a method and system for selectively transmitting information, e.g., business cards, calendar appointments and general data structure, from one device to a requesting device. The receiver makes the selection of a response. The receiver accepts the information, accepts or transmits information of the same category, or rejects the information based on a user choice. If the user selects the RECEIVE AND AUTOMATIC RESPONSE option, the device automatically sends information requested to the receiver both to the sender so that the two way transmission appears as one integral transmission between the users. In one embodiment, the data to be exchanged is business cards and the devices are portable handheld computer system.

In one embodiment, a method for communicating certain category of information is disclosed. The disclosure describes an electronic device transmitting a category of information to an another device. The receiving device receives the information and displays the type of response it will communicate to the first device. The receiving device responds to the sending device information of the same category.

Furthermore, an embodiment of the invention discloses a handheld device implemented two-way beaming of electronic business cards, calendar information and executable programs. The embodiment uses a dialog box in each of sending and receiving devices. The dialogue box enables the users to set the response in their respective devices. Based on this setting the system will selectively and automatically responds to a requester. A device receiving a request for transmission of a business card, will decide, based on the set mode, to accept the information without a response, reject the information received, or accept and store the information and transmit information of the same type automatically.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of an exemplary network environment including an exemplary personal digital assistant.

Figure 2A is a perspective illustration of the top face of one embodiment of the palmtop computer system

Figure 2B illustrates the bottom side of one embodiment of the palmtop computer system.

Figure 3 is an exploded view of the components of an exemplary palmtop computer system of Figure 2A.

Figure 4 illustrate two portable electronic devices beaming information automatically in a two-way beam.

Figure 5 is a flow block diagram of an exemplary process in accordance with an embodiment of the present invention.

Figure 6 illustrates the display screen during a dialogue session; the mode of transmission is set during this session.

Figure 7 illustrates screen when address button 88 of Figure 2A is depressed; tapping on "Beam Business card" choice causes the transmission of the information.

Figure 8 illustrates screen during the "response mode setting.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in detail to the preferred embodiments of the present invention, automatic beaming of business card or same category information between handheld computer systems, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with the preferred embodiments, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternatives, modifications and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims. Furthermore, in the following detailed description of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be recognized by one of ordinary skill in the art that the present invention may be practiced without these specific details. In other instances, well-known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of the present invention.

NOTATION AND NOMENCLATURE

Some portions of the detailed descriptions which follow are presented in terms of procedures, steps, logic blocks, processing, and other symbolic representations of operations on data bits that can be performed on computer memory. These descriptions and representations are the means used by those

skilled in the data processing arts to most effectively convey the substance of their work to others skilled in the art. A procedure, computer executed step, logic block, process, etc., is here, and generally, conceived to be a self-consistent

5 sequence of steps or instructions leading to a desired result. The steps are those requiring physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and

10 otherwise manipulated in a computer system. It has proven convenient at times, principally for reasons of common usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers, or the like.

15 It should be borne in mind, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities. Unless specifically stated otherwise as apparent from the following discussions, it is appreciated that

20 throughout the present invention, discussions utilizing terms such as "accessing" "processing" or "computing" or "translating" or "calculating" or "determining" or "scrolling" or "displaying" or "recognizing" or "transmitting" or "beaming" or the like, refer to the action and processes of a computer

25 system, or similar electronic computing device, that manipulates and transforms data represented as physical (electronic) quantities within the computer system's registers

and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices.

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Exemplary Palmtop Computer System Platform

The present invention is compatible with any electronic device having a wireless or other communication mechanism and organized records of information, such as a cell phone or a pager. One of the common types of electronic systems, which can

10   be used in accordance with one embodiment of the present invention, is referred to as a personal digital assistant, or commonly called a PDA. The PDA is a pocket sized electronic organizer with the capability to store telephone numbers, addresses, daily appointment, and software that keeps track of

15   business or personal data such as expenses, etc. Furthermore, the PDA also has the ability to connect to a personal computer, enabling the two devices to exchange updated information that is synchronizing the information between the two devices.

20   Additionally, the PDA can also be connected to a modem, enabling it to have electronic mail (e-mail) capabilities over the Internet along with other Internet capabilities. Moreover, an advanced PDA can have Internet capabilities over a wireless communication interface (e.g., radio interface).

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In particular, the PDA can be used to browse Web pages located on the Internet. The PDA can be coupled to a

networking environment. It should be appreciated that embodiments of the present invention are well suited to operate within a wide variety of electronic systems (e.g., computer systems) which can be communicatively coupled to a networking environment, including cellular phones, pagers, etc.

Figure 1 is a block diagram of an exemplary network environment 50 including an exemplary personal digital assistant. The PDA 100 is also known as a palmtop or palm-sized electronic system or computer system. The PDA 100 has the ability to transmit and receive data and information over a wireless communication interface (e.g., a radio interface). The PDA 100 is one exemplary implementation on which the present invention can operate. The present invention can operate on any portable electronic system or device.

In one embodiment, base station 32 is both a transmitter and receiver base station, which can be implemented by coupling it into an existing public telephone network 34. Implemented in this manner, base station 32 enables the personal digital assistant 100 to communicate with a proxy server computer system 36, which is coupled by wire 35 to the existing public telephone network 34. Furthermore, proxy server computer system 36 is coupled to the Internet 52, thereby enabling the PDA 100 to communicate with the Internet 52. It should be further appreciated that other embodiments of a communications

network may be utilized in accordance with the present
invention.

The data and information which are communicated between
5   base station 32 and the personal digital assistant 100 are a
type of information and data that can conventionally be
transferred and received over a public telephone wire network
system. However, a wireless communication interface is
utilized to communicate data and information between the PDA
10   100 and base station 32. It should be appreciated that one
embodiment of a wireless communication system in accordance
with the present invention is the Mobitex wireless
communication system.

15   Figure 2A is a perspective illustration of the top face
100a of one embodiment of the palmtop computer system. The top
face 100a contains a display screen 105 surrounded by a bezel
or cover. A removable stylus 80 is also shown. The display
screen 105 is a touch screen able to register contact between
20   the screen and the tip of the stylus 80. The stylus 80 can be
of any material to make contact with the screen 105. The top
face 100a also contains one or more dedicated and/or
programmable buttons 75 for selecting information and causing
the computer system to implement functions. The on/off button
25   95 is also shown.

Figure 2A also illustrates a handwriting recognition pad or "digitizer" containing two regions 106a and 106b. Region 106a is for the drawing of alphabetic characters therein (and not for numeric characters) for automatic recognition, and

5   region 106b is for the drawing of numeric characters therein (and not for alphabetic characters) for automatic recognition. The stylus 80 is used for stroking a character within one of the regions 106a or 106b. The stroke information is then fed to an internal processor for automatic character recognition.

10   Once characters are recognized, they are typically displayed on the screen for verification and/or modification.

Figure 2B illustrates the bottom side 100b of one embodiment of the palmtop computer system. An optional

15   extendible antenna 85 is shown and also a battery storage compartment door 90 is shown. A communication interface 108 is also shown. In one embodiment of the present invention, the communication interface 108 is a serial communication port, but could also alternatively be of any of a number of well known

20   communication standards and protocols, e.g., parallel, USB, SCSI, Firewire (IEEE 1394), Ethernet, etc. It is appreciated that interface 108 can also be used for charging current when using rechargeable batteries.

25   Figure 3 is an exploded view of the palmtop computer system 100 in accordance with one implementation. System 100 contains a front cover 210 having an outline of region 106 and

holes 75a for receiving buttons 75b. A flat panel display 105 (both liquid crystal display and touch screen) fits into front cover 210. Any of a number of display technologies can be used, e.g., liquid crystal display (LCD), field emission

5   display (FED), plasma, etc., for the flat panel display 105. A battery 215 provides electrical power. A contrast adjustment (potentiometer) 220 is also shown. On/off button 95 is shown along with an infrared emitter and detector device 64. A flex circuit 230 is shown along with a PC board 225 containing

10   electronics and logic (e.g., memory, communication bus, processor, etc.) for implementing computer system functionality. A digitizer pad can be part of the display assembly or it can also be included in PC board 225. A midframe 235 is shown along with stylus 80. Position

15   adjustable antenna 85 is shown.

A radio receiver/transmitter device 240 is also shown between the midframe and the rear cover 245 of Figure 3. The receiver/transmitter device 240 is coupled to the antenna 85

20   and also coupled to communicate with the PC board 225. In one implementation, the Mobitex wireless communication system is used to provide two way communications between system 100 and other networked computers and/or the Internet via a proxy server. In other embodiments, TCP protocol can be used.

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Figure 4 illustrates two-way beaming between two devices. The number of devices transmitting information is not limited

to two devices. A requesting device sends and receives information through a wireless communication interface 108, which ca be bluetooth or IR in one example.

5   Figure 4 illustrates the two-way automatic beaming session. Figure 4 configuration depicts a first device (i.e. the top device) sending information of certain category to a second device, (i.e.) bottom device, which receives the information and automatically transmits information of the same

10   category to the first device. For example the owner of the top device initiates the transmission by sending his/her business card and the bottom device receives the business card, files it and automatically sends the business card of its owner in return.

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      Figure 5 illustrates the flow diagram implementing a dialog session to set the mode for selective two-way beaming of the information. To set the mode the screen is turned on. Once the screen is turned on for the initial implementation, the IR

20   device, which is attached to the serial port 108 of the receiving device, continuously looks for an IR signal. At the step 520, once a IR signal is detected, a piece of software called the serial manager gets the entire transmitted communication form the transmitting device and the receiving

25   device parses the received information. At step 520, the system stores the data received in cache memory and displays a message on the screen indicating receipt of data.

During this user interface, the user is presented with the screen depicted in Figure 6. At this stage the user of the receiver device can select one of the following three modes of option. The user can select step 530 in which case the receiver device will not accept any incoming data and will transmit no response. If the user selects step 540, the receiver device will accept the incoming information but it does not transmit a corresponding response. However, if the user wants to receive the incoming request and automatically respond to the sender with the information of the same category, step 550 is chosen. Step 550 is the object of this invention, whereby the receiver system receives the information of a particular category and automatically sends back the information of the same type to the one who initiated the process. In one example, the receiver device accepts an electronic business card from a sending device and upon the user selecting choice 550.

Figure 6 illustrates the display screen 105 view of a receiver device during a dialogue session. Upon receipt of the first transmission, the screen displays three different mode settings and the owner of the device can select and set the device for one of the following modes: ACCEPT & AUTOMATIC RESPONSE 610, ACCEPT NO RESPONSE 620 or REJECT 630. The receiving and responding devices each can have a dialogue box and each can be set to the desired mode for two way automatic

beaming before the selective and automatic exchange can be accomplished.

Figure 7 illustrates screen 105 when application icon 88 is tapped. The system is ready to beam the user's electronic business card. In one mode of operation, the two way-beaming processes require both devices, the receiving and transmitting devices to have BEAM BOX 240 of Figure 3. Tapping on "BEAM BUSINESS CARD" choice causes the transmission of the information.

Alternatively, the user can simply hold down phone icon 710 for 1-2 seconds to initiate two-way beaming.

Figure 8 illustrates an operating system screen 105 where the owner of the device is given the choice of a response upon reviewing of the electronically received information. The user can use the screen of Figure 8 to program preferences for the two-way beam process.

The owner of the device can select "AUTOMATICALLY SEND SAME CATEGORY RESPONSE" 810, in which case the device does not wait for the owner's decision for response and sends information of the same category back to sender automatically. In this case, the user is not presented the choices of Figure 6 but rather selection 610 is automatically assumed as default.

If the owner of the device selects the "CUE THE USERS" mode 820, the device will receive the information and keeps it in cache memory. Screen 6 will then be and the owner can choose one of the choices in Figure 6 menu.

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